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X 143

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A tour in Jaunsar.

The Mundali Deodar Forest.—The area included in the working plan for this forest comprises 3,222 acres, of which some 2,700 are estimated to contain deodar. The lines of export lie along the ravines, or 'Gadhs' as they are locally termed, and of these there are seven, as follows :—Bamnai Gadh with an area in its basin of 488 acres, Tutua Gadh, 390 acres ; Barsoti Khala, 164 acres ; Girgat Gadh, 623 acres ; Dugra Gadh, 762 acres ; Lakhna Gadh, 338 acres; and Sarni Gadh, 457 acres. Eventually all these streams flow into the Dharagadh, down which sleepers are floated to the Tons. The bed of this stream was made suitable for floating by blasting rocks, &c., in 1889, at a cost of Rs. 3,000.

At present, only dead standing or fallen deodar trees are being exploited. The sleepers are cut in the forest, and are carried by men to Deikhera on the Dharagadh, a distance of 6 miles. They are floated from Deikhera to Chadiar, 3 miles lower down the stream, in the months of July and August, when there is sufficient water in the stream.

In October, when all danger from the sudden floods is past, the sleepers are taken down to the mouth of the Gadh, and when the sleepers from Deota arrive, are pushed into the Tons itself to join them. The sleepers are launched in the Dharagadh 5,000 at a time and are caught at Chadiar by a weir thrown across the stream.

In 1890 the weir was placed at the mouth of the Dharagadh, and all the sleepers were floated down it at one time. During a heavy flood the weir broke, and 13,000 sleepers were swept into the Tons; of these 2,200 were never recovered.

Sleepers can only be floated down the upper parts of the Dharagadh when the water is at its highest level, that is in July and August.

The cost of delivering a sleeper on the banks of the Tons is follows :—

	A.	P.
Cost of sawing per sleeper	3	3
Carriage to Deikhera, 6 miles, each	3	0
Cost of floating to mouth of Dharagadh, 5 miles ...	0	6
Total ...	6	9

Floating is much cheaper than carriage by men ; manual labour is not available during the rains, when the carriage has to be done.

The following table shows the number of trees removed and the yield of sleepers obtained from them :—

Year.	Compartment.	Trees felled.		Outturn of sleepers.
		Half dry.	Dry	
				M G.
1888 .	11 and 12 part of 13 and 15	100	135	10,405
1889 ...	15 and 18 part of 14 and 20	605	373	39,124
1891 ...	...	360	248	32,853
1892 ...	...	272	292	25,525

Previous to the sleeper works, the only fellings that took place were for the supply of free grants to villagers, chiefly in the 'khats' below Chakrata.

With regard to the conditions of growth of deodar in this forest, it has been calculated that this species attains a girth of six feet in 130 years, whereas the same girth is attained at Koti Kanásar in 80 years. After the age of 130 years, the deodar here grows very slowly ; hence there is no object in postponing the deodar fellings beyond that age.

The chief companion of deodar in Mundali is the spruce fir, the silver fir being found near the ravines and on the moister slopes.

Owing to the deodar growing up in a dense leaf canopy, the boles are clean and free from knots ; on the other hand the crowns are narrow and contracted and very few of them are in the necessary condition to bear seed ; the consequence is that we find very little reproduction : the seedlings that we do find growing under the leaf canopy and constituting the advance growth, are thin and weedy, with very little foliage and growing slowly ; they present a marked contrast to seedlings growing out in the open, under favourable conditions, as may be seen here and there at Mundali, and frequently at Mashak, Koti Kanásar, and elsewhere. The most striking point about them is their very sparse foliage, showing none of the bluish appearance found on more healthy seedlings, and with a length of annual shoot that rarely exceeds one inch. One may compare them to the suppressed deodar plants found under the thickets of blue pine.

In order to improve the growth of deodar, girdling operations have been undertaken. The object of these operations is the removal of all trees which are dominating or suppressing

deodar trees, and also to give room for the expansion of the crowns of the mature deodar trees with a view to increasing their seed producing powers. The chief species girdled is spruce fir and such broad-leaved species as are found here and there associated with the deodar are also taken. Where no deodar trees exist on the area no trees are girdled.

Certain fixed areas are taken in hand every year according to a definite scheme. The results of this girdling which began in 1883 are visible throughout in the shape of dead standing firs and oaks and it is certain that the deodar has benefitted thereby. The spruce fir takes about two years to die, and the Moru oak from 5 to 6. In the case of the latter species, it is necessary to remove every particle of the cambium layer otherwise a callus will be formed connecting the bark above and below the girdle, and the tree will continue to live. Several instances of this may be observed.

The rocks here belong to what is known as the Mundali series. They consist principally of conglomerates, in which angular pebbles of quartzite, slate or limestone are cemented together by a calcareous, silicious or slaty matrix. The series is younger than the Deoban limestone, on which it rests unconformably and it is largely developed near Kalsi. The resultant soil is a rich free loam, excellent for the growth of forest trees.

We visited Nursery No. 1 situated below and to the N. W. of the Bungalow. It is irrigated from a spring, some 600 feet distant, on the percolation system, *i. e.* water is admitted into trenches 18 inches wide between the beds, and soaks through to the roots of the plants. There were 63 beds, containing 7,145 deodar plants three years old ; and 1,770 deodar and 639 blue pine, just germinated. The average height of the three year old plants was about 9 inches ; they are 6 inches apart in lines 10 inches apart. They will be ready for putting out in July. The aspect of the Nursery is N. W., it is well drained, and sheltered by large trees at the sides. The soil, which is a stiff yellow loam, is improved by large additions of vegetable mould, brought from the forest.

There were also some plants in baskets. The baskets are 6½ inches diameter, and 9 inches high, and they cost Rs. 2-8-0 per 100 ; they are made of the common ringal.

Another nursery, No. 4, contained 872 deodar plants with an average height of 10 inches. Last year there were 3,028 with a height of 7 inches and about ⅔rds of these were put out into the forest that year. The general plan in these nurseries is only to put out the strong plants, leaving the weaker ones for another year ; transplanting into nursery lines two or three times ensures bushy roots being formed, and prevents the formation of a tap root.

We also visited the various plantations. In May 1892, 135 basket plants, 2¼ years old, were put out by the Forest School students ; this year the average length of the annual shoot is 8 inches which shews that they are doing well. The plants are

protected by Indigofera and other shrubs. These plants were put out in triangular patches, 5 feet from plant to plant, the whole triangle being hoed up.

In plantation No. 3 of 1892, a small area of 54 poles was hoed up, and the following plants put out:—400 ordinary transplants, 135 basketted plants, and 300 with a ball of earth. The average length of the annual shoot of the basketted plants was 7½ in. while that of the others was 6½ in.

Near this plantation we noticed a patch of forest stocked with spruce, moru and silver fir, the soil a rich moist loam, aspect North West. Here several trees had been girdled to give light to deodar planted underneath, and as pits had been prepared, the students, for an exercise, put out 200 deodar plants with a ball of earth 5 feet apart in triangular patches, but they will not make much growth until the girdled trees die, as they do not receive sufficient light. In 1889, Deodar and kail were sown in pits over an area of 26 acres in compartment No. 13 to the west of the bungalow. The plantation is in two places. The aspect is S-W. 10,250 pits in all were sown ; the sowings failed and the pits were resown in 1890. Nearly all the pits inspected in 1891 had young seedlings in them a few months old. The soil is rich and loose and contains a good deal of humus. The plantations are in sheltered spots and the ground fairly free from the growth of harmful weeds. The seedlings are looking healthy and strong ; 2,150 deodar plants were put out in this area in July and August, 1889.

In compartment No. 13 we inspected the plantation made in April of this year. The aspect is S. S. W., steep slope 35 degrees, soil hot and dry with Ban oak, Rhododendron and Aiyar scattered about; 350 basketted plants of deodar and 350 blue pine in baskets were put out alternately in contour lines, 5 feet from plant to plant, and 10 feet between the lines. The plants were 3 years old, and had been in the baskets one year.

Further on, we noticed a plantation of 1891, in which 1,380 deodar and 1,660 blue pine were put out with a ball of earth to fill up blanks. Although the aspect is S. the place is sheltered and the plants are doing well. The older deodar plants in this area had last year an annual shoot of 16½ inches.

Planting in groups of five in 10 feet square patches, 30 feet apart has also been tried ; the whole patch being well cultivated; 528 patches were thus prepared and plants put out with a ball of earth in July 1891. Under Indigofera and light shade, this kind of planting succeeds well. Last year the average height of the plants was 18 inches and of the annual shoot 11 inches.

Sowings in situ have been tried on two systems : first, the ordinary patch sowing in contour lines 10 feet apart on an open spur in compartment 10 ; 1,005 patches were sown with deodar in December 1890 and the seed germinated in March 1891. The soil is not deep, and the sowings have not been a success. Secondly, in plots of ground completely hoed up, 10 ft. square. About

200 seeds were sown in each plot in December 1890, and in 1892 the average number of seedlings in each plot was 20. These large plots can only be recommended among Indigofera, &c. They will never answer on bare hill sides.

It will thus be seen that during the last few years, sowing and planting of deodar has been tried by a variety of methods, and the experience gained so far shews that by far the best method in the end is that of basket planting. The roots are not disturbed, and the plant can be put out in the spring whenever the weather is favourable as in 1893, so that it has the whole growing season before it. If it costs a little more in the first instance, it is probably cheaper in the long run as there are no blanks to fill up—all the plants appear to live. The next best system to this is planting with a ball of earth. It is very difficult to raise blue pine from seed except under most favourable circumstances, and, as it has to be planted as a nurse, for this species too, basket planting would appear to be most suitable.

The upper portion of the Tutua block and a portion of the Bámnai block are set apart as a high level grazing ground for the sheep and goats of Jaunsar, which come to graze here in the summer when the valleys below are too hot for them. This area is too damp and high for deodar and chiefly carries a scattered crop of *Prunus Padus Pyrus lanata*, and maples on the gentle slopes near Kinani Pani we find magnificent specimens of spruce and silver fir. The following measurements taken with an Abney's level in 1892 will be interesting :—

Spruce fir, height	...	177 feet, girth	20 feet.
„ „	...	202 „ „	19 „
„ „	...	215 „ „	19 „
„ „	...	176 „ „	... „
Silver fir, „	...	172 „ „	13½ „
„ „	...	184 „ „	... „
Moru Oak, „	...	151 „ „	17 „
„ „	...	120 „ „	12 „

(*To be Continued*).

Located Fellings: a first step towards regular Working Plans

In their recently issued Report on Forest Administration in Madras during 1891-92, the Commissioners of Land Revenue assert that the advocacy of elaborate working-plans must be more or less a "counsel of perfection" until the immense work of forest settlement, combined with that of organizing fire protection and of training an efficient staff of subordinate officers, is completed. The value of this assertion must depend largely upon the degree of elaboration which, apart from the views of the non-technically trained heads of the presidency forest administration,

is held by competent foresters to be really necessary or desirable under present circumstances. The Local Government, however, in its orders on the Report goes further and clears up the question somewhat. It has laid down that the preparation of plans for working the forests on scientific principles would be premature until the problems of settlement, &c., have been solved. It is needless, perhaps, stopping to consider whether these orders are equivalent to the admission that the 7,000 square miles of forest already settled may be managed on unscientific principles, until all the reserved lands and other forests, aggregating some 14,000 square miles, which it is in contemplation to settle under the Forest Act, have been legally constituted. For the moment it may be interesting to compare the views on this question held respectively by the Madras and Central Provinces administrations. In the latter provinces, conditions bearing on the preparation of Working-Plans are at least as unfavourable as in Madras. Forest settlement—which in this case means the determination as to what portions of the existing reserved areas shall be permanently retained under strict conservation, and what may be made available for cultivation, is in active progress, while there is an insufficiency of establishment under all heads—none the less the local authorities will not accept the *non-possumus* of Madras and insist on following up a middle course, such as might, indeed, have occurred to the Madras Board had it made enquiry regarding the successful substitution of the coupe for the indefinite permit system in Salem, a district of which, by the way, the forest settlement is not half-completed.

In an important Resolution, issued at the beginning of this year, in which the introduction into the Central Provinces of the system of located fellings on an immense scale has been ordered, it is said: "The Forest Department in the Central Provinces 'labours under a great difficulty in the want of Working 'Plans. Owing to the weakness of the forest staff, there is no 'immediate prospect of this want being supplied *in the regular way*. 'Some provisional steps of an *exceptional* character must therefore 'be taken, which will facilitate the collection of *data* preparatory to 'working-plans, while rendering the working of the forest some-'thing less haphazard than at present." The existing system, it is said, does not enable the agriculturist to obtain forest produce with sufficient facility and cheapness, while the issue of permits, covering all parts of the forest not wholly closed, does not admit of the forest being improved and the fellings properly supervised. The new scheme accordingly provides for the sub-division of the forest into such a number of convenient working-circles, blocks and annual coupes, as will bring the purchaser within reasonable distance of the produce he requires. Felling of green timber in each circle, whether undertaken departmentally or on the permit system, will be concentrated in the coupe of the year. The other coupes will, for the present at least, remain open only for grazing,

the cutting of grass and bamboos, and the extraction of dry fuel and minor products. The scheme, so far as can be judged from the general outline published, resembles that introduced some years ago into the Thana Forests of Bombay ; and, in other provinces, similar expeditious methods for improving the character of the forest-growth and the system under which produce is exploited, are being brought into effect, especially when conditions for natural reproduction are satisfactory, and when the crops in each working circle are fairly uniform in character and demand little or no differentiation of treatment, the advantages of the system, as a first step towards the ultimate constitution of the crops according to various recognized sylvicultural methods, are at once apparent. It permits of far more rapid, more extensive and more material progress in forest organization than would otherwise, in most cases, be possible; it equalizes outturn and best satisfies local wants. It renders dishonest practices on the part of purchasers and of the forest staff more difficult of success. It lends itself according to the demand for produce and the means at disposal for the application of more intense treatment, to the gradual change from small beginnings to definite aims and ends, and does so without involving any material change of system. Above all, perhaps, it enables, in many instances, a relatively large proportion of the available establishment to be set free for employment in a few defined localities, and thus provides for that degree of supervision which allows of the advantages desirable from the elastic simplicity of the system being more fully reaped. Much naturally depends on the manner in which the framework of such a plan is prepared, and on the simple sylvicultural rules originally drawn up for the guidance of the executive officers. For instance, if a common felling—rotation for all the circles is decided upon, and an immense number of circles and coupes are laid out beforehand on large—scale maps without special inspection of the crops, without even calling in aid that comprehensive *coup d'œil forestier* of which the text-books speak, as is understood to have been done in some localities in India, subsequent embarrassments may prove considerable. But errors arising from the very simplicity of the system, and the main objection urged against working by area and cultural rules only, *viz.*, that the manner in which the crops are treated, in the case of improvement and selection fellings especially, cannot be controlled except after actual inspection, ought not to outweigh the advantages which, in the vast majority of the crops as they are now in this country, can be insured by the bestowal of a moderate amount of care. The coupe system, enforced in practice by means of the simple plans in question is that which seems *now* applicable to the great mass of our forests ; whether the sylvicultural operations undertaken have in view the immediate creation of coppice or the improvement or restoration of crops with some ulterior object. Simple plans in such cases are preferable to those we are accustomed to in India which from their enormity of detail, can

occasionally only be applied in practice under the guidance of a specially capable officer, and are often widely departed from or abandoned after a few years trial.

The progress of forest settlement, the insufficiency of executive officers and the like, have no doubt greatly hindered advance in the organization of forest working. But it seems at least possible that what may be called the apotheosis of working-plans has had even a more deterrent effect. At the same time, there are some grounds for the idea that a working-plan in India is ordinarily intended to be an elaborate piece of work, entailing a very considerable amount of labour both before and after the application of its provisions. An administrative officer, whose business is regulated by the Indian code, may reasonably hesitate before ordering the preparation of numerous reports, each of which, as the Government of India lay down, must be drawn up *as far as possible* under 46 heads, comprising some 60 different subjects. Or he may have no particular wish to subject himself to the correspondence of "control" which, under the present orders, may arise if sanctioned plans are departed from even in particulars of no material importance whatever. In the next place, the departmental code nowhere explains that it is only as an exception, in cases, for instance where demand exceeds supply or where produce is specially valuable, that a plan need be of other than a simple kind, or that as a general rule, any considerable degree of elaboration and detail, encased within the straight-waistcoat of countless prescriptions scattered here and there in a bulky volume, is likely to defeat the object in view. On the contrary. A perusal of Code sections 83 and 86, leaves behind it the distinct impression that the short and simple plan, formulating a general scheme and leaving to the officers who are to apply it, the execution of minor details, is rather to be the exception. The Code, it is true, devotes five lines out of about eight pages to the subject of simple plans. But it does so, as it were, apologetically, apparently with a view to the provision of temporary and unsatisfactory substitutes for the more elaborate plans to be subsequently drawn up, following the procedure of the 46 headings *et cetera*. The counsel of perfection is probably first cousin to the counsel of despair. The influence of the code in this direction may be traced in the remarks of the Madras Board of Revenue and in the depreciative tone of the Central Provinces Resolution above-mentioned. Why should it be assumed that the procedure of which the outline is given in that Resolution is necessarily exceptional or irregular? These lines have been written in the desire to suggest, rather than with the endeavour in any way to prove that, in the present condition of our half-ruined and irregular forests, such simple easily understood and applicable plans need not be aplogized for but are indeed those best adapted to satisfy for years to come the requirements of the people and of the Forest Department, and should rather be the rule than the exception.

'VAGRANT.'

Wood Paving from India.

From the 'Timber Trades Journal' for July 29th the following notes on the gradual spread of the use of wood as a paving material, are worth reprinting, for they lead to a question which we may well ask ourselves in this country and that is: why should not India have its share in the supply of wood paving blocks for the streets of the cities and towns of Europe and America and probably of India itself?

'Wood Paving.—The Ipswich Paving and Lighting Committee have accepted the tender of Mr. B. G. Elliott, of Kentish Town, N. W., to supply jarrah blocks at £13 per thousand.

'At the meeting of the Camberwell Vestry, Mr. Wallace brought up a report of the surveyor's estimate of the probable cost of repairing Rye Lane, Peckham, with wood blocks. The cost of carrying out the work from High Street to Blenheim Grove was estimated at £2,000, and from High Street to Choumert Road £3,000, and from High Street to Sternhall Lane £4,000. The Committee recommended that temporary repairs be carried out at a cost of about £60. This was agreed to.

'The London County Council have agreed to pay half the cost (£4,405) of certain wood-paving works in Paddington, and to contribute £1,450 to the cost of paving the space between Sussex Place and Chester Place with wood.

'The Finance Committee of the London County Council admits that there is good ground to assume that jarrah wood will last longer than deal, and hence the Council allows seven years for repayment of loans on its account But on Tuesday it declined to advise the Council to extend the period beyond that time. Consequently they have only consented to the St. Pancras Vestry borrowing £24,000 for jarrah or karri wood paving, on condition that it be repaid in seven years.

'The Strand District Board has received permission to borrow £7,000 for wood and asphalte paving works.

'The London County Council is about to pave the Whitehall Place approach to the Victoria Embankment, in equal portions, with jarrah and karri wood respectively, at a cost of £3,100, in order to test the two kinds of wood. The work will be carried out by the Works and Stores department

'The Woolwich Local Board of Health on Tuesday accepted the tender of Messrs Mowlem & Co. to lay jarrah wood paving in the vicinity of places of worship."

The noticeable point is the great use which is beginning to be made of the two great West Australian timbers 'jarrah' and 'karri' and the flaring advertisement of companies to work concessions of forests of those species are not uncommon in the newspapers. But surely we have in India timber just as good and procurable from forests situated on good rivers within easy distance of the coast which could compete in every respect with the Australian trade. If

the Ipswich rate is anything like an average, it comes to about 3d. per block, and if each block is 4 in. square and 6 in. deep, to 4s.-8d. cubic foot.

It seems probable from the indications we publish and from other information, that most European and American towns will sooner or later replace their old stone, asphalte or macadam pavement with wood. Since it has been proved that, by the American method of hot air drying, all fungus germs can be killed and all albuminoid substances so desiccated as to obviate development on them of fungoid growths without interfering with the physical qualities of the timber, many of the objections to wood-pavements have been removed and especially those connected with sanitation. Consequently, the gradual introduction of wood in road-paving is merely a question of time, and those who are interested in finding markets for surplus forest produce ought not to pass the opportunity of sharing in the demand which it may safely be anticipated will shortly spring up.

It seems that hard heavy woods like 'jarrah' are likely to be preferred to the softer deals and pine which have been used so much in London; and it is just these heavy woods of which we possess in some of the Indian forests, such a large quantity which at present has litttle or no sale. It has always been more or less a reproach against the Indian Forest Department that railways have been made through its reserves and these reserves have not assisted in the supply of sleepers. The causes of this are easy enough to understand, and are (1) the preference which the companies shew for iron sleepers which can be provided merely on an order to a large firm and with comparatively little trouble in examination; (2) the desire of forest officers to make a good show of revenue and perhaps to stand out for too large a profit; (3) the want of labour and the difficulty of organization in new localities, often unhealthy; (4) the imperious necessities of Budget arrangements which prevent on the one side, the Public Works Department or the Railway Company from giving its order sufficiently long before hand; and on the other, the forest officers from getting ready sleepers when it is not absolutely certain that they will be purchased; (5) the small size of Indian trees except in the hills, preventing the economic use of any but the best and soundest and straightest of timber for such a purpose as sleepers, and so on; but in the case of wood-blocks these difficulties would disappear: for if the market is large, blocks can be cut for it without previously arranged contract for sale; a small profit will be better than none at all; the small size of the pieces makes extraction and conversion easy, and any trees having sufficient heart-wood for the purpose and otherwise sound will do. So that we think there is a great future for the industry and that it behoves those who are in charge of forests which have suitable timber, not to lose the chance which is now presented to them.

First and foremost among the likely woods, is undoubtedly the 'Pynkado' (*Xylia dolabriformis*) which occurs throughout Burma

and also in large quantities on the opposite coast in the hills of Vizagapatam and Godavari, all within easy reach of the sea and usually provided with cheap water carriage. Pynkado is already in use for telegraph poles and sleepers and we imagine that the new paving-block industry would prove economical as enabling less of the wood to be wasted, for many trees which might only give a few sound sleepers could also give in addition a fair number of paving blocks out of ends and sides and pieces with knots and similar flaws. We would suggest that an attempt be made by the Burma Forest Department to send home to some good agent for sale, a large consignment of 'Pynkado' and have it tried. Perhaps the well-known oil which fills the pores of the wood may make the preliminary use of a desiccation process unnecessary.

Then there are also many other kinds which might do, for instance, the ubiquitous *Terminalia tomentosa* the 'Saj,' 'Asan,' 'Toukkyan,' 'Maddi' of various parts of India seems just the kind of wood for the purpose. Then there is the 'Nagesar' or 'Gangaw' (*Mesua ferrea*) of which considerable quantities could be cut and brought to Chittagong, Akyab and the Burmah ports without much expense. Then there are the *Lagerstrômias*, *Shoreas*, *Hopeas*, *Hardwickia*, *Soymida*, and doubtless many other names will occur to those who are in charge of forests in likely places such as the West Coast country from Bombay to Cochin, the East coast forests from the Kistna to the Mahanadi, the Chittagong Hills, the Sunderbuns, and the forests of Aracan, Pegu and Tenasserim—everywhere in short where a copious rainfall gives forests of large trees and a large supply of timbers of many species only a few of which have, like the Teak, an assured and permanent market.

It must be remembered by those who try for the new market that success is not always attainable at once. Every tradesman who starts a new business in a new commodity, knows that it takes a good deal of capital, some time, much advertising and above all plenty of patience to start a market, but that when once successfully gained, the returns flow in. It is no use giving up because a "small trial consignment' fails, the thing to do is to go on, to force the market and it will succeed in the end. We feel sure that if really strong measures are taken to obtain it, India will, before long, send to Europe and America paving blocks to the value of many lacs and the forest revenue bid fair by its increase to repair some of the losses which may result from the present financial crisis and by the attempts which are being made to reduce, if not abolish, the revenue from opium. A few years' time should see 'Pynkado' and other names as much household words in the European and American paving block market as are the 'Jarrah' and 'Karri' which our Australian neighbours have taken such pains to introduce and sell.

As a proof of what can by done in this respect, we need only point to the trade in Padouk which has been firmly established within the last few years.

The Prize day at Coopers Hill, 1893.

The Prize day was held on the 28th July, and in the unavoidable absence of Lord Kimberley, the prizes won during the season, at the Royal Engineering College, Coopers Hill, were presented by Sir Alfred Lyall.

General Sir Alexander Taylor, in reviewing the events of the past year, mentioned that in the case of the foresters the extension of their course of training from 2¼ to 3 years, sanctioned in 1891, had now taken effect, and he had no doubt the new arrangement would be attended with good results. It was to this department that it was due that the forests in India which were rapidly disappearing under the wasteful arrangements that formerly prevailed, are now being fostered and conserved, without stopping the supply of timber to the market. At the same time, an important income was being secured by the sale of forest produce—an income that was rapidly increasing. The official returns showed that in 1891-92 the net income of the Department after deducting all charges, amounted to Rs. 64,66,580. These results were due to the administrative ability and high professional skill of the superior officers of the Department. It was quite certain, however, that if Forestry was to go on advancing in India, the training of Forest Officers must keep pace with the times. How was this to be done? The home of economic Forestry was the continent of Europe, especially France and Germany. It had therefore, been the custom to devote the latter part of the Forestry course to a visit of three months to the most suitable forests of Germany. These annual visits had now developed into a system of apprenticeship, extending over 5 months, beginning in April and ending in the middle of September, and this year the foresters had been apprenticed two by two to Prussian forest officers. This arrangement was at present in an experimental stage, and time only could show whether all the advantages expected from it would be realised. It was hoped that on the completion of his apprenticeship next September, the young forest officer would be equipped to go to India with such a grasp of the subject, both theoretical and practical, as to be competent to introduce the best methods of European forestry, so far as they could be adapted to the conditions of the East. Another change connected with the Forestry branch deserved notice. Hitherto the fellows of the college had been appointed exclusively from among the engineering students, but Lord Kimberley had now decided that foresters should also be eligible, and this decision had been given retrospective effect to. Five foresters who had passed out in days gone by, *viz*:—Rogers, B. B. Osmaston, Haines, Leete and Carr had consequently been appointed fellows by the Secretary of State and two foresters were included in the fellows appointed this year. The fellowship of the college was the highest honour that could be conferred on

a distinguished student. It was not granted to a fixed number at the head of the senior year, but only to a selected few who had done so remarkably well as to call from the college and the Secretary of State a special mark of approbation. In regard to the senior foresters just about to leave, Dr. Schlich wrote that taking them one with another, they were the best set of forest students that had been at the college.

The following information so far as concerns forest students is extracted from the year's prize list.

Appointed fellows of Coopers Hill.

H. G. Billson. ... C. C. Abbey.

Scholarships—Second year Students.

Scholar in the forest course B. O. Coventry.

Prizemen—Third year Students.

Forestry ... ... C. C Abbey.
Forest law ... .. R. M. Williamson.
Accounts (open to the whole college) H. A Latham

Prizemen—Second year Students.

Forest management ... H. E. Bartlett.
Botany ... ... B. O. Coventry.
Geology (open to the whole college) B O. Coventry.

Prizemen—First year Students.

Botany ... ... W. W Mayes.
Sylviculture ... W. W. Mayes.

Sir Alfred Lyall, in distributing the prizes, said he was particularly gratified to hear that engineers and foresters of the third yeair were exceedingly good. No one connected with India could fal to understand the great reliance placed on men coming from Coopers Hill to fill positions in those important branches of the Indian Government, namely, the Telegraph Department, the Forest Department and the Department of Public Works.

The following students have been appointed Assistant Conservators of Forests, H.G. Billson, C. C. Abbey, R. M. Williamson, R. C. Milward, F. Linnell, W. F. Perrée, C. B. Smales, S. Cox, E. P. Stebbing, H. F. A. Wood, H. Tireman, F. E. B. Lloyd.

C. G. R.

Obituary, J. Kelly.

We regret having to announce the death of Mr. J. Kelly, an Extra Assistant Conservator on the Provincial staff of the Assam Forest Department. Mr. Kelly was transferred from the Revenue Survey Department in 1886 and joined the forests as a Sub-Assistant Conservator. He was promoted to E. A. C. 2nd grade on the reorganization of the Department in 1891, and to E. A. C. 1st grade in April 1893, only a few days

before his death, which occurred on the 28th May in the General Hospital, Calcutta. Mr. Kelly had been in charge of the Nowgong Forest Divison during the past two years and had proved himself a useful and successful officer in that appointment. He was much liked sociably, for many generous qualities, and his early death at the age of 35 has been regretted even beyond the circle of his departmental friends. He was a conspicuous and enthusiastic trooper of the Assam Volunteer Mounted Infantry and a very regular attendant at the yearly camps of Exercise of this Corps, from which his genial presence will be much missed on all future occasions.

II.—CORRESPONDENCE.

Tea-Boxes.

SIR,

I see two notes in the Indian Forester for June 1893, on the subject of tea-box woods, one by Mr. C. W. Hope and the other by the Honorary Editor.

I should like to make a few remarks on the subject, as I think that I had a good deal to do with the tea-box trade making such progress in the two districts of Lakhimpur and Sibsagar in Assam.

Before the year 1886, few tea-boxes were cut up in Assam and Government made little or no revenue from this trade.

Mr. J. Hulbert who was manager of the Upper Assam Tea Company was the first to start the trade on a proper footing, with an energetic manager and first rate machinery. It was through him that I was induced to send forward proposals, regarding the levying of Government royalty on a new basis; and this it was that gave the great impetus to trade of late years, as can be seen from the figures given in the Assam Forest Report for the year 1891-92. These rules avoided all the friction that formerly occurred with the Forest Department: and nearly all the sawmills applied to be allowed to work under them.

The out-turn of tea-boxes (see figures in the Assam Forest Report) is now nearly 4,00,000. Mr. C. W. Hope thinks these figures are over estimated by nearly one lakh; but he must remember, that in this total are included boxes, cut up from private timber, that do not therefore pay the Government royalty of one anna a box.

Again it is stated that Messrs. Davenport & Co. of Calcutta, import annually 1,500,000, of Japan Tea-boxes. Are these figures correct?

I am sorry I have not got the figures to which I can refer; but still I think I can remember sufficient to shew there must be something wrong somewhere.

The out-turn of tea for the whole of India, is, I believe,s omething under 130,000,000 lbs ; and an ordinary tea-box holds at least 90 to 100 lbs of tea on the average; so that Messrs. Davenport & Co. import annually more than a sufficient number of tea-boxes from Japan, to pack the whole of the tea production of India. In this case what becomes of all the boxes made locally?

The 400,000 tea boxes shewn in the Assam Forest Report for 1891-92, are, I believe, only the out-turn of two or three districts in Assam, and I fancy that for the whole of Assam at least 600,000 boxes are made locally, or purchased otherwise than through Messrs. Davenport & Co. These 600,000 tea-boxes being sufficient to hold nearly half the tea produced in India : can you therefore tell me, how Messrs Davenport & Co. manage to dispose of their 1,500,000 Japan tea-boxes.

I could give a good deal more information on this subject, both as regards sawmills, the Assam rules for sawing tea-boxes, the woods used, &c., &c., if Mr. C. W. Hope would care to have it, in the meanwhile I will wait to hear further from him.

VIPER.

NOTE.—Possibly the mistake has arisen by "tea boxes" being mixed up with "tea shooks." 1,500,000 tea shooks would represent a very much smaller number of tea-boxes, probably not more than 135,000.

Growth of Eucalyptus in Hoshiarpur.

DEAR SIR.

The following statistics as to the growth of Eucalyptus in Unah, Hoshiarpur district, will probably be of interest to some of your readers.

The trees were raised from seed, obtained from Abbottabad, and sown in, I think, 1877 or 1878 (certainly not earlier than 1876) and some of the finest now measure as follows :—

1	Girth 4 feet	from the	ground	5	ft.	7	inches, height	115 ft.
2	do.	do.		5	„	5	„ „	115 „
3	do.	do.		5	„	1	„ „	115 „
4	do.	do.		5	„	6	„ „	75 „

The species is *E. tereticornis.*

I give also the measurements of 4 years back which show I think a good rate of growth in a tree, more or less mature. The measurements for 1889, presumably for the same trees, are as follows :—

58	inches at 4 feet	from the ground.
56	do.	do.
54	do.	do.
54	do.	do.

W. COLDSTREAM.

III.—OFFICIAL PAPERS & INTELLIGENCE.

Allowances to Working Plans Officers.

The following circular on this subject has recently issued and may be of interest to some of our readers.

The Government of Bengal has drawn attention to the application in practice of the provisions of sections 21 and 23 of the Forest Department Code, under which a specially appointed working-plans officer is entitled to draw a local allowance, and has suggested that the rule should be materially modified or cancelled. The reasons adduced in support of this suggestion are, mainly, that the allowance is generally unnecessary and inexpedient, because the officer concerned may receive special remuneration for several months during which he does but little towards the actual preparation of the plan ; because his responsibilites will ordinarily be less heavy and his duties less arduous than those of a divisional forest officer ; because he is not necessarily specially qualified ; and lastly, because the grant of the allowance is a direct incentive to postpone as long as possible the completion of the working-plan.

2. The Government of India are disposed to think that some alteration of the existing rule is desirable ; but, before issuing instructions, they will be glad to learn other views on the questions raised. I am to suggest for consideration that, in the event of special remuneration being considered advisable at all, the grant of the allowance should be contingent on the support of the Conservator of the circle concerned, who would be required to show that exceptionally arduous work, increased personal expenditure, or prolonged travelling in remote or difficult localities, is entailed in each case. It may also be remembered that the divisional forest officer is in many cases the official best qualified to prepare a working-plan for the forests of his charge ; and it will often be the most convenient course to entrust the work to him, making special arrangements to relieve him of some of his current duties. In such a case, the divisional officer would be called upon to undertake such business as a part of his ordinary duties, and it would require some very special circumstance to entitle him to a special reward.

Budget Estimates of the Forest Department for 1893-94.

The Budget Estimates for 1892-93 were given at page 390 of our last Volume. We now give the figures of the Estimates for 1893-94, the current year.

Provinces	1891-92. Actuals.			1892-93. Revised Estimates.			Budget Estimates, 1893-94. Finally Sanctioned by Government of India.		
	Receipts.	Charges.	Surplus.	Receipts.	Charges.	Surplus.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
India.									
General Direction		53,668	—53,668		74,700	— 74,700		69,000	—69,000
Indore	6,688	1,480	5,208	5,500	1,380	— 4,120	4,530	1,500	3,030
Imperial Forest School	1,788	44,347	—42,559	1,900	51,000	— 49,100	1,500	62,600	—61,100
,, Survey	257	26,882	—26,625	463	22,000	— 21,537		28,000	—28,000
Ajmere	19,799	3,986	6,813	14,000	14,000		14,000	14,000	
Andamans	2,72,338	1,79,908	92,430	3,80,237	2,23,000	1,57,237	3,29,000	2,04,000	1,25,000
Baluchistan	20,609	30 497	—9,888	18,000	57,100	— 39,000	31,200	90,800	—59,600
Coorg	1,82,897	86,839	96,058	1,80,000	81,000	99,000	1,54,000	87,000	67,000
Add or deduct for rounding					— 80	+ 80	—290	+ 100	— 390
Total India	5,04,376	4,37,607	66,769	6,00,000	5,24,000	76,000	5,34,000	5,57,000	—23 000
Central Provinces	13,59,900	8,03,132	5,56,768	12,87,000	8,73,000	4,14,000	14,00,000	10,00,000	4,00,000
Upper Burma	13,27,300	3,43,253	9,84 047	20,75,000	4,45,000	16,30,000	18,50,000	5,83 000	12,67,000
Lower Burma	28,58,114	13,24,965	15,33,149	35,20,000	13,73,000	21,47,000	30,00,000	14,00,000	16,00,000
Assam	3,36,129	2,67,135	68,994	3,43,000	2,85,000	58,000	3,74,000	3,14,000	60,000
Bengal	7,80,553	4,20,470	3,60 083	7,50,000	4,45,000	3,05,000	7,74,000	4,81,000	2,93,000
North-Western Provinces and Oudh.	17,31,514	9,52,241	7,79,273	17,75,000	9,74,000	8,01,000	16,46,000	10,02,000	6,44,000
Punjab	10,20,074	6,39,357	3,80,717	8,12,000	6,70,000	1,42,000	9,00,000	6,74,000	2,26,000
Madras	16,94,216	13,13,315	3,80,901	17,64,000	13,90,000	3,74,000	16,00,000	13,24,000	2,76,000
Bombay	32,84,649	19,27,138	13,57,511	33,50,000	19,50,000	1,40,000	35,10,000	22,52,000	12,58,000
Total	1,49,05,825	84,26,613	64,77,212	1,62,76,000	89,29,000	73,47,000	1,58,88,000	98,67,000	60,01,000
England		7,420	—7,420		17,000	—17,000		9,000	— 9,000
Exchange on charges in England.		3,220	—3,220		10,000	—10,000		6,000	— 6,000
TOTAL	149,05,825	84,39,253	64,66,572	1,62,76,000	89,56,000	73,20,000	1,58,88,000	99,02,000	59,86,000
Berar	5,11,185	1,98,366	3,12,819	4,85,000	2,40,000	2,48,000	4,90,000	2,51,000	2,39,000
GRAND TOTAL	154,17,010	86,37,619	67,79,391	167,64,000	91,96,000	75,68,000	163,78,000	101,53,000	62,25,000

IV.—REVIEWS.

Forest Planting in New York State.

Forestry in the United States has up to date, at any rate from a Government point of view, been a failure, and a failure as regards the whole country it is likely to remain for many years to come. But though it is not likely that Congress will take the matter up and pass general laws to constitute a Government united forest domain, to prevent forest firing, regulate lumbering, and arrange for the restocking of areas too denuded for natural reproduction; yet there are many signs that individual States are taking the matter up, and that, although not quite in the same way as is done in the chief European countries, in India, and in some British Colonies, a considerable step towards forest maintenance will soon be apparent. Among the pioneer States in the forest work, the foremost will probably be that of New York, the great State which stretches northwards from the great American seaport to the Canadian frontier and furnishes in the Catskill and Adirondack mountains some of the most beautiful localities of Trans-atlantic scenery. Dr. Jarchow's little book, which is now before us, is expressly published in order to act as a sort of Forestry text-book for the New York State and though no doubt here and there there will be found some useful advice and valuable information, yet on the whole the result cannot be said to be wholly satisfactory. Compared with such a really useful practical work as Dr. Franklin Hough's 'Elements of Forestry' in some respects Dr. Jarchow's work is only disappointing. The work is divided into three parts, 'Forest culture,' 'Forest planting on plains' and 'Forest planting on mountains.' In the first, after several general chapters of an introductory kind, ten pages are given to 'Systems of forest Management' and four to 'Natural reproduction' the rest being devoted to Artificial Reproduction of a more or less horticultural character.

'Scientific Forestry' 'our author tells us' 'does not designate any exact science' but consists in three points which are (1) sustained production, (2) natural regeneration, (3) progressive improvement: and here we have no doubt but that the author has very rightly consulted our old Nancy text book by M. M. Lorentz and Parade. We can only feel sorry that he did not consult it further.

'FOREST PLANTING' a treatise on the care of timber lands, by H. N. Jarchow, L. L. D., Orange Judd Company, New York and Kegan Paul, Trench Trubner & Co., London.

Properly preserved forests, he tells us, must : (1) be guarded from encroachment ; (2) be protected from injury of various kinds (3) be managed by three principles, *first* " the annual felling of 'mature, or defective dead trees and their transportation so that no 'damage shall be done to young growing trees ;" *secondly* " the 'periodical thinning out of places where the trees have sprung up 'too thickly ;" and *thirdly* the filling of vacant spots " by natural 'reproduction of the trees either by shoots, sprouts or layers, or by 'the natural sowing of seed " or " by artificial replanting." So far, so good, this is excellent as a beginning but the programme is not always properly developed.

Dr. Jarchow claims that the State should own ; (1) the forests and areas surrounding the watersheds of the navigable rivers ; (2) the sand-dunes along the coast ; and (3) every area unfit for agriculture but adapted for forest ; but his illustrations of the advantage of state management are not always happy as may be seen from the following extract.

'For instance, if a private person possesses a mine which cost 'every year $100,000 in order to obtain its yearly output valued at '$100,000, there is no net profit, and the owner of the mine would 'hardly be inclined to continue the enterprise, unless prompted by 'the charitable desire to give some men employment. From a 'quite different standpoint would in this case the question of the 'profitableness be considered, should the Government take this work 'in hand. The $ 100,000 paid for labor, machinery, etc., would 'then be looked upon as benefitting the people, and the nation 'would have by the continued exploitation of the mine a profit 'of $ 100,000 every year, that being the sum which had been dis-'tributed for labor, etc.

In the 5th chapter the advantage of Forest Schools is described and the School he takes for his model is not one of the well-known German institutions, or that at Nancy, but the comparatively minor French one of 'Les Barres' where some half-dozen subordinates are yearly instructed in practical work.

We do not propose to attempt to discuss in detail Dr. Jarchow's hints on the artificial rearing of trees for we know too little of the requirements of the individual American kinds. We prefer to let our readers judge for themselves, and say, that while wishing every possible success to New York Forestry, we hope the next writer will produce a work of a more suitable kind, and treat his subject from a wider point of view

Annual Forest Administration Reports for 1891-92 for the Central Provinces and Bombay.

With the exception of these two Reports we have now gone over all the Provincial Reports for 1891-92. In some respects the two most interesting have been kept till the end, for in both of these Provinces the Local Government has found fault with its officers, without there being, that we can find out, sufficient reason for doing so.

Thus, in the *Central Provinces* Report, the most noticeable matter is the censure bestowed by the Chief Commissioner on the Forest Staff because most of the offences in which Section 67 of the Forest Act was put in force were apparently 'utterly trivial.' We should like to know what the Chief Commissioner thinks section 67 was inserted in the Act for if it were not to meet the case of 'utterly trivial' offences *i.e.*, offences in which it would not only be hard on the offender, but would entail too much loss of time on the forest officer, if the accused were taken before a magistrate. In most Provinces, there would probably be censure if in the Annual Reports the offences compounded were *not* found to be trivial, and the silence on the subject on the part of the Government of India Resolution seems to point to what we feel sure is the case, their disagreement with the point of view from which Sir Antony MacDonnell regards Section 67. No doubt 7,849 is a large number of cases, but the Province is a big one as regards wideness of forest area and the protective staff is admittedly weak and possibly does not always remember that preventing offences is better than detecting them after commission. To make a practice of letting off offenders in 'trivial cases' would simply make the Department a laughing stock ; to prosecute each before the Magistrate would be very often hard on the men concerned and would keep the Forest Officers hanging about courts half their time, so that we are at a loss to see what the Chief Commissioner would have the Forest Officers do. If he wanted to introduce leniency in such matters, a quiet hint to the Conservators would have done all that was wanted, but to publicly censure officers of the Government for doing their duty and carrying out the law is hardly calculated to bring credit to the administration of India. And it is the same with the order about cattle in transit who t are now "only to be impounded when the injury done to the fores s is serious and deliberate." To prove serious and deliberate injury in such a case would be almost impossible, for the injury is not usually due to the passage of one herd but to the continued and successive passage of many herds ; and besides, there would usually be but little evidence of intentional damage and consequently the order means, so far as we can see, that cattle are in future to come and go through the forest as they please, along or on the sides of public roads and within 50 yards on either side, and it would have been better to have said so at once straight off.

Col. Doveton utters a warning note as to the danger of reducing too much the area of true forest in the Central Provinces. He says, with reference to the Agricultural Department Resolution of 1891 on the classification of the Forest area.

"The fact has to be faced that it is only in the true forest 'area that fodder and water are likely to be found in times of 'real scarcity. Scrub jungles will answer well enough in time 'of plenty, in the rains and in the cold season; but in times 'of real scarcity they must in these Provinces prove a broken 'reed. Then it may be noted that, with a few exceptions, in 'these Provinces there is not likely to be any true forest of 'any extent that has not grass lands in patches within it."

We presume his intention is to deprecate too wholesale an action on the recent determination of Government to disforest portions of the Reserves for extension of cultivation. In the Northern Circle, under the recommendation of a previous Conservator (now retired) considerable areas have already been cut off and alienated and we hope that before they go much further with this policy they will not forget Col. Doveton's warning and remember that the Government of India themselves only approve of the arrangements "provided that the culturable area is in each instance 'of sufficient extent for the formation of a village and that the 'reserves are not unnecessarily cut up or honeycombed by scattered 'cultivation." It would be strange if, while we are all reading Dr. Voelcker's excellent report recommending the extension of the forest area in the interests of agriculture, we should be in some places reducing the existing area to a less amount than the country ought to have.

The difference between the methods of shifting cultivation adopted by the Gonds and Bygas respectively forms one of the subjects of the greatest interest in the Report of the Northern Circle. Mr. Thompson says:

"In Mandla extensive open valleys exist containing rich black 'soils, which have resulted from the decomposition of the prevalent 'surface trap rocks. These valleys occupy an aggregate area 'roughly estimated to be a thousand square miles. There is little or 'no forest growth on the land, the forests only occupying the sides, 'crests and flat tops of the aligning ridges. At present the 'valleys are well watered, thanks to the prevailing cover along 'the confining ridges, but a time may very shortly come, unless 'specially provided against, when the present forest growth on 'the upper ridges and plateaux shall have been swept away by 'the axe of the rapidly advancing Gond cultivator, who, weaned 'by advancing competition of his habit of Dhya cutting, has fallen 'almost unobserved into the far more destructive and pernicious 'habit of making *burra* clearings, that is clearing the land gra-'dually—for a temporary form of cultivation—of its timber growth. 'First, as preliminary to further operations, the brush-wood is 'caused to disappear, the land being immediately ploughed or

'raked up and sown with kudo and kutki; in a year or two 'or later follows the disappearance of the trees, and then a plain 'or open hill side is created, which is thus exposed to the 'fullest action of the prevailing frosts of those uplands.

'Following the denudation of the land by removal of its 'timber covering, the usual annual growth of grass and of 'young shoots from the remaining living stools left in the 'ground, appear; the cold season sets in; frosts make their 'appearance; and by the middle of the ensuing spring season 'the plains and hill sides are cleared of every vestige and stick 'of vegetable growth by the annually recurring fires. This, 'repeated in time without apparent cessation, gives the key to the 'evolution of the great plain-valleys and the treeless hill sides 'of the central, northern and north-eastern portions of the Mandla 'District.

'The extent to which absolute results have thus been brought 'about by the Gond, sinks into insignificance the more immediately 'patent and therefore striking clearings made by the Byga with his '*bewar* cuttings. And with this important difference that, while the 'Byga lays bare a hill side or cuts down the trees on the crests of 'ridges, no sooner has he done with the land than it again becomes 'reclothed with wood of some kind or other, because his work lies 'in a region which is above the influence of frosts. Not so as re-'gards the clearings made by the Gond. The latter has left his 'mark on the country in a manner that will take centuries to ob-'literate; while in thirty years the mischief done by a Byga is more 'or less repaired. Thus is the difference marked between the re-'sults the Byga creates in a forest, and that which the Gond to 'the present day, in some of the districts of the Central Provinces, 'is encouraged to do in the hope that he is the pioneer to more 'settled forms of cultivation. While every possible measure has 'been taken to restrict the Byga's tendencies and to confine him to 'localities wherein he cannot do much present harm, the insidious 'Gond is still left to roam in almost full possession of hill sides and 'valleys, under the belief that he is practising a harmless if not a 'permanent form of cultivation."

The Local Government seems to have disapproved somewhat of these remarks, for they say:

'The Chief Commissioner has noticed Mr. Thompson's remarks 'on the excision of land for cultivation in Mandla, and on the 'injury done to the forests by the *barra* and *bewar* clearings for cul-'tivation of Gonds and Bygas. It is notorious that Gonds and 'Bygas in past times have done much damage by their wasteful 'methods of cultivation; but the Conservator, Northern Circle, is 'evidently imperfectly informed on the facts, when he says that 'Gonds are now-a-days allowed "to roam in almost full possession 'of hill sides and valleys under the belief that they are practising a 'harmless, if not permanent, form of cultivation" and that "in 'some of the the districts of the Central Proxinces they are *encour-'aged* (in wasteful clearings) in the hope that they are the pioneers

'of a more settled form of cultivation." The policy of the Adminis-'tration is directed towards the abolition of *barra* and *bewar* culti-'vation; and the suppression of the migratory habits of these 'aboriginal tribes is the direct object of that system of patch culti-'vation which, though the result of *barra* clearings in the past, is 'now made to lead up to a ryotwari settlement. But the ingrained 'habits and customs of centuries are not changed in a day: nor can 'the lives of a very helpless and very pitiable class of the popula-'tion of these Provinces be wholly subordinated to departmental 'views. Efforts compatible with the safety of these poor aborigines 'are being made not merely to wean, but to force them from a mig-'ratory to a settled system of agriculture; and so far as the Bygas 'are concerned, a successful issue is well within sight. The very 'essence of the ryotwari settlement is that the cultivator binds him-'self to pay the revenue fixed on a survey number, and he cannot 'take up any new land without payment for a fresh survey number. 'Moreover all culturable areas are demarcated into survey numbers 'within the limits of some particular village constituted under the 'excision scheme, and it is not open to the ryot to pick and choose 'the site he likes. It will no doubt take time and tact and manage-'ment to convert all restless Gonds into settled cultivators, but the 'work is in hand."

And the Government of India endeavours, diplomatically, to show that there ismuch to be said on both sides in the following order.

"The Government of India have read with interest and con-'cern paragraphs 13 and 14 of the Report of the Northern Circle, 'which, though indicating an incomplete appreciation of the policy 'of the administration towards the Gond cultivators, seem never-'theless to give a correct picture of the destruction which is still 'being worked by them; and they agree with you that the object 'to be held in view is the conversion of the Gond into a settled 'cultivator at the same time that *barra* cultivation is suppressed. 'Future administration reports should indicate the results and pro-'gress of the efforts made in this direction, and should specially notice 'in what particulars and to what extent the system of patch culti-'vation mentioned in your Resolution differs in practice from *barra* cultivation, and whether the changes made have had the desired 'effect."

In the Northern Circle *strip fellings* were carried on in the Sukri Forests. We were under the impression that these strip fellings had everywhere been given up as too costly and troublesome and as having practically failed. Some of our readers may be interested to hear that for each stack of firewood measuring 25ft. × 5ft. × 4 ft. = 500 cubic feet, Rs. 5 was paid to the contractor, and that each such stack was found to contain exactly 100 maunds of fuel.

The death of sal trees in the forests of the Banjar Valley both in 1869-70, and again in 1891-92 is described in the following note which we extract as being one of much interest. If we remember rightly, something similar has occurred in very dry years in the Sal forests of Bengal, in the Darjeeling Terai and the Western Dúars

'The years 1869-70 were years of drought and famine over 'large tracts of India. Those years were specially remarkable for 'the large number of trees which died in the Sal forests of the 'Banjar Valley. The past two years have again been exceptional 'as regards little rainfall, with the result that again a large area of 'Sal forest on the lighter soils is disastrously affected by the prevail-'ing drought. As a striking case in point that the cause of death 'of the trees is due to drought, may be cited (1) the vigorous and 'healthy growth of the species resting on the more humid soils 'which are made up principally of matter derived from the pre-'vailing trap-rocks,—and (2) the remarkable healthiness of the 'forests, though individually not attaining the stature of trees on 'the lighter soils of the metamorphic region, of the Sal forests 'resting directly on the traps in the north-eastern parts of Mandla. 'In this region, for miles round, the Sal occupies the pure trap, 'attaining larger dimensions as the higher laterites are reached. 'Nowhere in the trap forests was it observed that the trees were 'dead or dying. Hence there can scarcely be a doubt that the 'cause of so many Sal trees dying in the Banjar Valley Reserve is 'due to the drying up of the soil in years of little rainfall, to an 'extent injurious to the living tree. We have also the coincident 'fact that a similar phenomenon appeared in the years 1869-70, 'which were years of drought, the death of the trees being 'preceded by a copious discharge of resin. The year 1890 was 'distinctly characterised as one of excessive exudation of resin from 'the Sal trees."

We will conclude our notice of the Central Provinces Report with two extracts from the Southern Circle Report on (1) the important question of the liability to damage from insects of pure forests of teak ; and (2) the growth and seeding of bamboo, a subject to which Col. Doveton is well known to have long devoted special and careful attention.

In regard to the teak, he says :—"In the Ahiri forest the 'tendency of teak to establish itself to the exclusion of other 'species has become very marked in all the small areas which prior 'to fire protection were blank, and in such places during the past 'year the damage done by the destruction of the foliage of the 'young trees by insects has been altogether excessive. The results 'in those once blank areas are a good illustration of the necessity, 'in most parts of the Ahiri Reserve, of precautions to guard 'against the creation of a pure teak forest."

And in respect to the bamboo :—"With reference to para-'graph 8 of the Government of India Review of the Report for '1890-91, it may be noted that the culms of bamboo attain their 'full size in a very short space of time, and it is an established fact 'that if, within the 15 days from the time of their starting from 'the rhizomes, the rain-fall is not copious, the culms fail to develop, 'and often wither and die off before attaining more than a foot or 'two in height. It is, however, also an established fact that in

'many cases the bamboo ceases to throw up shoots preparatory 'to seeding. The seeding of the bamboo, however, is to some 'extent connected with a diminished rain-fall, and hence it gener- 'ally happens that the seed of the *Dendrocalamus* is obtainable in 'greater abundance in seasons of scarcity than at other times.

'In parts of the forest in the Sironcha taluqa there has of 'late years been tolerably extensive seeding of the bamboo. In a 'few favourable localities the reproduction of the species has 'progressed favourably, but over a very considerable area it may 'be said that the species has almost entirely disappeared, owing 'probably to the want of protection from fire and the impoverish- 'ment of the soil resulting therefrom."

The Ebony '*Diospyros Ebenum*' (is not *D. Melanoxylon* or *D. tomentosa* really meant, for *D. Ebenum* is a denizen of the evergreen forests of the dry Carnatic country and hardly we believe goes so far north as the Godavari. It is not given in Brandis.) is said to reproduce almost exclusively by suckers and to make a grand show of foliage in the hot weather when other trees are not in leaf.

In taking up the *Bombay* Report for 1891-92 we are reminded that that for 1890-91, a memorable one in many repects, has never been reviewed in our pages. The discussion on the, what we consider, unnecessarily severe remarks of Government on that Report was a matter of considerable notoriety last year and evoked an expression of outside independant opinion in the Public Press on the question of the action of Forest Officers in regard to compounding offences under section 67 of the Forest Act. The Bombay Government objected, as that of the Central Provinces has done this year, that the offences compounded were too 'trivial' and on this the *Times of India* wrote as follows :—

"The conclusion arrived at by the local Government, that 'their Forest officers have availed themselves far too freely of the 'powers entrusted to them under Section 67 of the Forest Act, and 'that these officers have exacted compensation in a number of trivial 'cases which would most undoubtedly have been dismissed by 'Magistrates seems to indicate that the very object of Section 67 'has been lost sight of by the authors of the Resolution. Surely, 'this section is primarily intended to be utilized in respect of so- 'called trivial Forest offences. If not, it might just as well cease 'to have a place in the Forest Act. It would be absurd to apply it 'constantly in the case of serious offences, which the Legislature 'undoubtedly intends should be dealt with by the Magistracy. It 'is meant to apply to trivial cases, and the Legislature in passing it 'fully recognized that the trivial mischiefs and thefts which the 'Bombay Government now make so little of could not be passed 'over. Compounding, obviously, cannot have been intended for 'serious offences."

Of course it may be that in some places forest prosecutions, or the compounding of offences, may have been occasionally harsh when they referred to ignorant people who did not know the rules,

It may be mentioned here that the census figures in this connection appear to have been under-estimated. There would not be much of spontaneity to return one as in trade and commerce because of the allergy against being made a payee of sales tax or income-tax.

Trade Centres.

Regulated Markets.

There are no regulated markets in the district worthy of the name. In a limited sense we may say that the market of sugarcane has been regulated under the Bihar Sugar Factories Act, 1937, and the Rules framed thereunder in 1938. Since the passing of this Act and Rules thereunder, the price of cane is fixed from year to year and the canegrowers are assured of payment of the price of sugarcane within the period specified in the Act on account of the establishment of a number of Canegrowers' Co-operative Societies and Unions under the Act. A fuller account of the effects and provisions of this Act will be found in the Chapter ' Industries '.

Centres of wholesale business and mandis.

There are mainly four commodities of importance, namely, cloth, grains, jute and turmeric, in which some wholesale business is done in the district, the first two being of greater importance. As the town of Muzaffarpur in the neighbouring district of the same name has many large wholesale merchants in cloth, many retail-sellers of Champaran have direct contact with them. However, the petty and less resourceful dealers of the district have their dealings with the local wholesale merchants. So far grains are concerned, much of the paddy produce is procured by the rice mills of the district. The northern part of the district is the chief paddy producing area and many rice mills are situated in that portion.

The chief centres of wholesale business in the district are Motihari, Bettiah, Raxaul, Adapur, Sikta, Narkatiaganj, Bagaha and Chainpatia. Wholesale trading in cloth is done at Motihari, Bettiah and Raxaul. Bettiah has been the chief marketing centre in the district since long on account of being the seat of the ex-Bettiah Raj. It continues to be headquarters of a subdivision. Motihari has acquired importance by virtue of being the headquarters of the district. Raxaul is situated at the Indo-Nepal border and is connected with the interior of Nepal by a Light Railway of that country and also with the interior of Champaran and the rest of Bihar by two metre gauge lines of the North-Eastern Railway. Besides, a good road connecting Raxaul with Kathmandu in Nepal has been built.

Wholesale trading in grains is carried on at each of the wholesale trading centres of the district, but the most important of them are Adapur and Bagaha. Adapur is situated in the northern portion of the district in a very fertile tract of land. Normally famines do not

'the latter, however, suffer more than the former when fire over-
'runs the compartment. The seeding in the Thana forests was very
'bad during the year, especially in the case of teak trees; the heads
of flowers were numerous on the teak trees, but in most cases
'became barren, and often where drupes had formed, it was found
'that the seeds contained had not ripened. A great deal of damage
'was done to the teak by caterpillars during the rains and up to
'the second week of November, when they suddenly disappeared;
'these caterpillars were of small size, greyish black, with a
'brown head, and were in such myriads that the leaves of
'all the teak trees in the district were reduced to skeletons of
'net-work, the caterpillars eating all the parenchyma of the
'leaves, and leaving only the fibres intact. The effect of this
'visitation on the trees, especially on young seedlings and coppice
'shoots, the tender leaves of which were especially toothsome to the
'caterpillars, must have been disastrous upon the increment of
'wood, besides weakening the trees; it is a noticeable fact that
'the trees broke out into new leaf much earlier in 1892 than
'ordinarily."

We have been interested to read the records of success in artificial reproduction by means both of transplants and of sowings—babùl seed sown broadcast by Forest Guards came up thickly in the Kamthi Budrak Reserve and in the Panch Mehals similar sowings of various trees appear to have been very successful. The following extract is interesting both as a record of successful results and as an indication that the Bombay Forest Officers have been more successful than their comrades in most other Provinces in getting the Forest Guards to help in the work. Our experience is that a Forest Guard, though he may have previously been a labourer, when once he dons the uniform and the belt, becomes at once much too fine a gentleman to do manual labour and objects to having to cut creepers and tend plantations in the way in which the French 'Garde Forestier' is accustomed to do. We congratulate the Bombay Officers on their success in this way and hope that the arrangement will extend, though of course it must in many places be accompanied by a reduction in beat areas.

"Though the season was excessively wet in Gujarát, the rains
'held off completely during June in the Surat division, whereby
'planting operations were much delayed. Exploited coupe No. 1
'of the Gandera Reserved Forest was sown up in pits 1 foot deep
'and 6 feet apart, with seeds from the Dangs: seedlings locally
'raised were also planted out in it, teak occupying every alternate
'pit, and in the month of November 1891, the whole surface was
'carpeted with seedlings and shoots; blanks were planted up
'in reserves in all the ranges by transplants of naturally sown
'seedlings from surrounding forests without outside help, and in
'addition thereto by broad-cast seeds over a larger area. The results
'are satisfactory. The Goema Reserved Forest now exhibits a very
'interesting spectacle to a forester; its site was barren waste land
'in the knowledge of the writer of this report 23 years ago, and it

'was then sown up chiefly with babúl ; and seedlings of teak, of 'Terminalia, Anogeissus, Dalbergia, &c., raised in nurseries, were 'planted out subsequently among the bábul ; the latter grew up to 'marketable size, and has been cut out at different times after it had 'been overtopped by the teak and junglewood saplings, which are 'now entirely suppressing the few remaining bábul trees in the 'struggle for the survival of the fittest, while the receipts already 'obtained by the sale of the exploited bábul wood have more than 'paid the expenses of creating a very rich little forest estate.'

The remarks of Mr Shuttleworth on the utility of prickly pear on the one hand and its harm on the other will, we trust, be read with interest. But we think he is wrong in calling it *Opuntia Dillenii* and suggest his having it identified at Calcutta or Kew.

We believe it is the fact that the species *O Dillenii* is rather a rare one in India, for there are several species of prickly pear in the country, all of them occasionally troublesome and mostly very different in appearance, having flowers red or yellow and leaves green or grey, etc but all the same even in such works as Brandis, 'Forest Flora' *O. Dillenii* has always been spoken of as *the* Indian Cactus. It was left for Mr. J. Steavenson of Madras to point out the mistake and to shew that there were many species naturalized in India. It is quite probable that a little botanical investigation will shew that in the Bombay Northern Circle, there are several species and not only one.

"The eradication of prickly pear, *Opuntia Dillenii*, natural 'order Cacteæ, from Reserved Forests in several divisions, has been 'carried on with vigour. This pestiferous plant, which is a native 'of Brazil, and now so common about most of the Deccan villages 'where it provides a safe refuge for wild pig, snakes and vermin 'of sorts in its dense impenetrable tangled masses, which form an 'unbroken cover over acres of ground, was introduced into Western 'India, so native tradition explains, by a Maratha Sirdar Dábhádé 'by name, who brought a few seeds of it in his palanquin from 'Delhi, and his gift has been as noxious to the Deccan as was the 'shirt to Hercules. It is a very valuable plant for the reboisement 'of the barren and denuded uplands of the Deccan, for it establishes 'itself upon the most stony soilless places, and it refuses to be turned 'out when it has once taken root, save at great cost and labour ; filth 'and debris are arrested by it and accummulate round it, and its 'own roots open out the pores of the earth and form soil The 'natives call it the *nágphana nivadung ;* armed plants such as 'the *Euphorbia neriifolia, Nivulia*, &c., are likewise generally termed '"*nivadung*" in the vernacular, with Sabri and Thor added to 'denote their species : but the prickly-pear is called the *nagphana 'nivadung* because its obovate, flat, fleshy joints resemble the 'expanded hood of the cobra. It is a very common mistake among 'officials and others to speak, and to write, of the Sabri, *Euphordia 'neriifolia*, as a *Cactus*, which it has no claim to be, and thus confu-'sion is caused. The prickly-pear is botanically called the *Cactus*

'*indicus* by Roxburgh in his Flora Indica The *Opuntia Dillenii* 'is enormously aggressive with its very great power of spreading, 'for the joints strike root wherever they may find themselves car- 'ried and dropped by man, or by the wind, or by water, and the 'seeds are deposited in all directions by birds, which eat the fruits, 'and when once this plant has been introduced upon a boundary line 'as a living hedge, an office it discharges very effectively, it very 'soon invades the property it was originally brought to protect. 'New growth, seedlings and shoots, come up here, there and every 'where, and as it is very gregarious it soon occupies land to the 'exclusion of superior vegetation and of grasses. It has to be cut 'down limb by limb and levelled to the ground, then the roots have to 'be dug up, and the whole carcass buried under several feet of 'earth ; this is the most effective method of eradicating it ; simply 'cutting it down, drying the severed parts in the sun, and burning 'them, which is a costly proceeding, will not always destroy the per- 'sistent vitality of the plant. The nine-lived cat would have no 'chance against the prickly-pear in a competition against death by 'violence. In the East Khandesh division, where there is not for- 'tunately much prickly-pear, the beat guards dig it out wherever 'it shows itself. In the Násik division, an area of 670,248 square 'feet within the Raolas Reserved Forest in the Niphád range was 'cleared of prickly-pear at a cost of Rs. 103-5-0. In the Ahmed- 'nagar division 16,179 cart loads of prickly-pear were removed from '366 acres 26 gunthas of bábul forests in different ranges, and the 'material was buried in nalas and rifts under two feet of earth, the 'cost of the operation amounting to Rs. 1,034-8."

"In the Poona division ten gangs of six men each have been 'engaged partly as famine work for varying periods in the Haveli, 'Indapur and Bhimthadi ranges in digging out prickly-pear and 'trimming the hedges of this interesting plant, wherever it was 'getting beyond bounds. 73½ acres were cleared entirely and 7,131 'cart-loads of the prickly-pear were destroyed. Forest guards 'removed all young and fresh growth from the forests of their 'beats. Rs 1,960-1-3 were expended in the division.

"Prickly-pear was removed from the Burlé bábul reserve in 'the Tasgaon range by hired labour, at a cost of Rs. 198-12-6 ; 'and creepers were severed and killed by forest guards in the 'forests of the western ghats in the Satara division.

"All the forest guards of the Sholápur division are equipped 'with bill hooks to keep their reserves free of creepers and also 'to remove freshly intruding prickly-pear, and paid labour has 'been employed where the forest guards were unable to cope with 'the evil."

The Sind Circle Report has an interesting account of 'Kachas', or, as they are perhaps better known in Northern India, 'Churs' which we must leave for future notice, there not being 'sufficient space for remarks and extracts in the present number

Mr. Hexton has an amusing paragraph on the impossibility of utilizing what he calls 'scientific forestry' in Sind which we reproduce though we do not quite agree with him. Indeed, as the Commissioner points out, he himself has in a further paragraph devised means for a working plan as he "has come to the conclusion that a 12 years' rotation is best suited to produce a regular supply of fuel," and taken steps accordingly! Whether he will succeed in providing for a demand *equal to twice the annual yield* remains to be seen.

Scientific forestry almost impossible in Sind.

"Place the cleverest Continental Professor of Forestry in 'Sind, and say to him here you are in 'charge of 1,000 square miles of forest, 'one-third of which is incapable of 'reproduction; your rainfall is next to nothing, and part 'of your forest area may or may not be watered by inundation; 'you must remember that you are liable to lose thousands of acres 'by erosion, but you must be prepared to supply about double your 'annual yield, and you must not fail to show a net revenue of 'between two and three lakhs of rupees. Now, produce your 'working plans, remembering that in your plans for reproduction 'and conservancy you must for the time being forget your 'Continental ideas of grazing, and be prepared to give to villagers 'the rights and privileges conceded to them by the Revenue 'Officer; and you must bear in mind that your controlling 'staff will consist of yourself, one European Assistant and three 'Native Sub-Assistants." The look of utter despair on the face of 'the poor Professor and the expressions that would escape his lips, 'as his position began to dawn upon him, may be better imagined 'than described He would simply be staggered. We should hear 'very little use made of such scientific phrases as "reboisement" 'and "artificial re-generation," he would quickly be brought face 'to face with "the factors of the locality," and he would soon be 'an authority on "the hygroscopicity of sands." In short, he 'would find himself surrounded by unlectured-of, unread-of and 'unheard-of conditions. His beautiful theories, one by one, would 'be cast to the winds; he would be compiled to feel his way so 'gradually, and adapt himself so completely to his surroundings 'that in a few years his forestry would be of a decidedly empiri-'cal character."

Mr. Hexton is, we think, mistaken in his conception of the meaning of 'Scientific forestry.' Scientific forestry as we understand it, means the adaptation of what have been shewn by experience to be the best methods of treating forests to the circumstances of a particular locality; and though possibly he would not think so, his reverence for the professor being so great, he is himself a scientific Forester when he determines from his experience that 12 years is a sufficient rotation and that the plan of work must be simple, and then sets to work to frame a working plan based upon these conditions.

We will conclude by saying that we are glad to notice the tone of conciliation adopted in the Bombay Government Review. We hope and trust that conciliation will continue and that steps will be taken to revise the rules and again put the relations of Revenue and Forest Officers on a footing which is likely to succeed Let the Collector by all means represent the Department in his District and take full responsibility in doing so, but let that suffice. Assistant Collectors and Mamlatdars should have nothing to say to forest matters, and if the Collector has to instruct them in matters where their work is connected with forests let his orders go through his Forest Assistant, as in Madras, and not direct. We hope they will now cancel the absurd Rules of last year and have a new and proper arrangement such as will be equally approved by both the Revenue and Forest Officers.

VI—EXTRACTS, NOTES AND QUERIES.

New Indiarubber Rules in Assam.

The new rules introduced during the year with the sanction of the Government of India by which the old system of farming the collection of rubber was abandoned and replaced by the imposition of a duty of Rs 12 per maund, on all rubber imported from beyond the border, or collected from trees growing on Government forest land, have worked very successfully from a financial point of view, the receipts from the duty collected during the past season having amounted to over Rs. 50,000 as compared to Rs. 25,585 received from the contractors in the previous year 1891-92

The Rules only came into force on 1st November 1892, and there was naturally some little delay in getting them understood by merchants and others interested in the rubber trade. But when this was accomplished, the rules seem to have worked fairly well and to have given no cause of complaint to either hill man or trader. And although the exports of rubber were 1800 maunds less than usual up to 31st of last March, the returns of the following three month's ending 30th June 1893 prove that the trade has pulled up its lee way and even exceeded figures of recent years

Royal Scottish Arboricultural Society.

The fortieth annual general meeting of the Royal Scottish Arboricultural Society was held in the Bible Society's Rooms, St Andrew Square, Edinburgh. Professor Bayley Balfour, president of the Society, occupied the chair, and eighty-five new members were elected.

The President, in his address, congratulated the members on the prosperous state of the Society. In the matter of the accession of new members the present was a record year, and the Society now numbered 600 ; and they had further evidence of its prosperity and influence in the success which attended their efforts to promote the cause of forestry in this country. In this connection he reminded them that Colonel Bailey, in his introductory lecture to the University forestry class last year, had referred to the fact that in specifications issued by the Board of Agriculture, with reference to works to be executed under the Lands Improvements Act, the use of home-grown timber was prohibited. This restriction had been discussed, and the Society had, through Mr. Munro Ferguson, entered into communication with the Board of Agriculture. The result had been that the protest of the Society had had effect, and the objectionable prohibition respecting home-grown timber had been removed for Scotland so far as concerned work under the control of the Board of Agriculture—an eloquent tribute to the usefulness of the Society as representing the voice of forestry interests in Scotland. Their clear duty now was to follow up what they had already done by a vigorous inquiry into the forms of contracts insisted upon by all other departments which made specifications involving the use of timber, so that they might altogether remove the stigma which had become attached to home products. The President referred, in passing, to the Forestry Exhibition at Earl's Court—an undertaking from which he personally did not see that much credit could redound to the society which had given its patronage, nor advantage to forestry. Turning to educational matters, he expressed satisfaction at the success which had attended the operation of the scheme for teaching practical foresters and gardeners at the Royal Botanic Gardens. The course had been opened in November last, and lectures had been given up till now in chemistry, physics, entomology, mensuration, and land surveying. The attendance at the classes had been excellent, and the examinations satisfactory all round ; and as to those under instruction, he would defy anyone to find a finer body of men. He looked forward to a fruitful continuance of the course, and he took exception to observations upon the course by the chairman of the Forestry Committee of the Highland and Agricultural Society He thought it was unfortunate that reckless assertions of that kind, which were not calculated in the least to promote the cause of forestry, should be made by those professedly

speaking in its support. With reference to University education, the past year had been not uneventful. Forestry had now been assigned a place in the University curriculum for B. Sc. in agriculture, and though it was at present an optional subject, yet with the realisation of the importance of the forestry, further recognition of its right place would come. Colonel Bailey had carried on vigorously the course of lectures at the University, having an attendance of thirteen students, and those whom it was expected would take advantage of such a course were just those who attended. He reminded them that the ultimate realisation of their hopes of a professorship foundation ought not to satisfy their aspirations for the future of their science. They must confess, indeed, that after several years of effort, it was a little disappointing that the endowment of the Chair at which they were aiming was no nearer being reached. It was a misfortune that landed proprietors did not see their interest in the direction to which the Society pointed, and unquestionably the general circumstances of the time did not favour the accumulation of such a fund as the Society sought to establish. But he raised the question whether there was no other way by which they could gain a more advanced position towards their goal. Technical education was no longer a vague expression. It had passed beyond that to the stage of specialisation, and it should be the aim of all those in whose power the regulation of such education was placed so to foster it that it should most efficiently supply the needs of the population in whose midst it was established, and that cognate subjects with a common foundation should be taught in combination. In Edinburgh they might claim to be a great horticultural centre. They had to remember that in many respects forestry, horticulture, and agriculture were cognate subjects, and the question he asked was whether there was no way by which some concentration could be brought about? When he noted the good work that was being done by co-operative effort in such an institution as the Science College at Newcastle-on-Tyne, he sighed for the time when in Edinburgh they would have combined their energies, and in a similar, even more extended college, carry on with effect and at minimum cost education in the subjects he had mentioned. He believed the thing was possible, and the question was how that concentration should be developed and the college he spoke of established. It appeared to him that the utilisation of existing endowed institutions would be the simplest and right method of procedure, and that it was possible for the Town Council, acting with characteristic liberal spirit, to give the college he suggested. The foundation of it appeared to him to be already laid. The Town Council was trustee of the Royal Veterinary College, and therefore specially interested in that institution, which had not yet, he believed, come into the full use of its endowment. Was not that the college that should be utilised as a centre around which a representative technical college should be built up? Such

a college could be affiliated to the University, and made an integral part of it. To this institution the various contributions for that special education could be assigned, and the staff would be increased to meet the requirements of the time. The President indicated some of the details which in such a college would receive attention, and at the close, on the motion of Dr. Cleghorn, he was thanked for his address.

Eucalyptus and Malaria in Italy.

We have received from Mr. W. Coldstream, C. S., Deputy Commissioner of Simla, so well known as interested in Indian Arboriculture and as the author of an important work on Indian grasses, a letter just received by him from Signor Fortunato Cardinali, Secretary to the Agricultural Society of Rome on the subject of the work at the Tre Fontane Monastery to which reference was made in our June (p. 225) and August (p. 303) numbers. Signor Cardinali says :—

"It is true that many experiments have been set on foot in 'Italy with the object of ameliorating the hygienic conditions of 'malarious localities ; but the results have not been very satisfac- 'tory because that exotic plant has only thriven with difficulty 'with us, probably on account of the difference between this and 'the climate of its native country, that is to say, Australia, where 'there exist immense forests with notable advantages as much from 'the hygienic as from the economic point of view. Here in Rome 'we have one example, near the estate called 'Tre Fontane' ; 'where the Trappist Monks have occupied themselves in making a 'plantation of Eucalyptus since 1866 ; and although they have 'expended considerable sums of money and taken especial pains, 'they have only succeeded in raising some hundreds of plants out 'of so many thousands put out and those plants of relatively poor 'growth.

'The monks extract from the leaves of the Eucalyptus trees 'a liquor which is sold as an 'antifebrile tonic' but to fight the 'fever properly quinine is really wanted.

'I know that the cultivation of Eucalyptus in Algeria has 'succeeded in giving excellent results."

Signor Cardinali's letter seems to supply the answer to the queries put in Mr. Fernandez's letter in our August number ; and the facts appear to be that a great deal of rubbish has been written about the Tre Fontane plantations which does not accord with the real facts of the case, which are that Eucalyptus planting has been a distinct failure in the Roman Campagna, just as it has been in so many places in India.

Douglas Fir for Tea Boxes.

Mr. J. B. Spence of Ceylon has made an arrangement with the Ottawa agent of the Rathbun Company for a trial shipment of shooks for the construction of tea boxes. Of all the woods submitted, Mr. Spence favoured the Douglas fir, of British Columbia, which he considers vastly superior to the wood at present obtained from Japan. Shipments of fir box shooks can be made direct from British Columbia to Ceylon, and Mr. Spence believes that the trade will soon become one of the most important branches of the lumber industry. The tea trade of Ceylon requires about 1,000,000 boxes yearly.—(*Timber Trades Journal.*)

VII.—TIMBER AND PRODUCE TRADE.

The Teak Trade.

The following extracts from the 'Timber Trades Journal' will interest our readers. We hope that before long we may see *Padouk* and *Pyinma* and other woods as regularly quoted in the trade lists as *Teak* is now.

"THE WOODS OF BURMAH.—According to an official report 'which we have received from Moulmein, the prospects of the teak 'trade there are not hopeful. Of late years, especially during the 'last two or three, there has been a 'great falling off in the 'exports. In 1888-89 the exports from Moulmein to the United 'Kingdom amounted to 22,783 tons, the next year they rose to '23,555 tons, but since then they have not exceeded 6,831 tons. The 'shipments to the Continental ports have not fluctuated consider-'ably during the last three years; but a drop from 2,511 tons in '1891 to 1,457 tons in 1892 is recorded in the exports to Egypt 'and Cape Colony. The shipments of wood other than teak have 'hitherto been of a somewhat experimetal nature, but with regard 'to the Indian trade in these woods the Conservator of 'Forests in the Tenasserim Circle regards the outlook as encou-'raging. The demand for sleepers is active, owing to the new 'railways. Heretofore these have mainly consisted of Pyinkado, 'but the difficulty of its conversion (it is one of the hardest woods 'in the Indian forest) has led to experiments with Kanyin, Ingyin, 'and Pyinma. The latter has proved very successful, but the two 'former have been failures. Pyinma is said to be almost as good 'as teak."

"SIAM.—Siam has lately come into general prominence and 'everyone has learned something about the country in order to 'join in the morning-train conversation Fortunately a report is 'just to hand from the British Consul-General at Bangkok, from 'which we learn that British shipping is responsible for 87 per 'cent., of the tonnage of the port, and that the value of the teak 'exported therefrom last year was £62,793. Much progress has 'lately been made with the Bangkok-Korat railway, for which '30,000 sleepers have been delivered during the present year. They 'are of excellent hard wood from the west of Siam, at Kanburee 'and Ratburee, where it is found in abundance. Our Consul also 'refers to a mania that the Siamese have for collecting the labels of 'match-boxes—a curious fact of interest to Swedish readers. Another 'report comes from Mr. Stringer, our Vice-Consul at Chiengmai in 'Northern Siam. He says that the export of teak has been unusu-'ally large. The teak forests of the Nan State have been very little 'worked as yet, for the local authorities have kept them in their own 'hands, but they seem inclined now to grant leases of some of the 'forests, which are said to be very valuable The forests, in Chieng-'mai and Nan, drained by the Mekong and its tributaries, are only 'worked for local use, as logs cannot be sent down the Mekong to 'Saigon on account of the rapids. Thefts of the teak and of the 'elephants used in working on the logs, are the main drawbacks to 'the business, in which, in spite of the decline of the prices in 'London, British firms are taking a larger share. Woods other than 'teak are not worked for export, as they do not repay the cost of 'floating down."

Churchill and Sim's Circular.

September, 6th 1893.

EAST INDIA TEAK.—The deliveries for the first eight months have been 8,783 loads, in comparison with 6,995 loads for that period of 1892, and 9,841 loads for the eight months of 1891. In August this year the figures are 1,157 loads against 574 loads in 1892 and 868 loads in 1891. The Dock stock is amply sufficient for present needs, but the improvement shown on the order books of shipbuilding firms, though hardly affecting the present situation, is satisfactory as pointing to a good consumption of teak in the future.

ROSEWOOD.—The stocks are not heavy; but in the absence of any improvement in the demand no sales have been made.

SATINWOOD.—*Logs*—the demand is very quiet, and therefore present stocks, although not large, are sufficient; planks and boards are not wanted.

EBONY.—The prices still rule low; but there is rather more demand.

PRICE CURRENT.

Indian Teak	per load	£9-10s.	to	£15
Satinwood	,, ton	£5	to	£12
Rosewood	,, ,,	£5	to	£9
Ebony	,, ,,	£5	to	£7

MARKET RATES OF PRODUCTS.

(*Tropical Agriculturist, September 1st, 1893.*)

Cardamoms, Malabar	per lb.	2s.	to	2s.6d.
Croton seeds	per cwt.	20s.	to	27s.6d
Cutch	,,	20s.	to	23s.
Gum Arabic, Madras	,,	15s.	to	50s.
Gum Kino	,,	£15	to	£20.
India Rubber, Assam	per lb.	1s.7d.	to	2s.3d.
,, Rangoon	,,	1s.7d.	to	1s.11d.
Myrabolams, Bombay	per cwt	10s.	to	11s.3d.
,, , Godavari	,,	7s.6d.	to	8s.
Nux Vomica	,,	8s.	to	11s.
Orchella	,,	12s.	to	28s.
Redwood	per ton	£3.	to	£3-10
Sandalwood, logs	,,	£35	to	£55
,, chips	,,	£9	to	£30
Sapan wood	,,	£4.	to	£7.
Seedlac	per cwt	40s.	to	70s.
Tamarinds	,,	8s	to	9s.

Cawnpore Price Current.

October 4th, 1893.

	Per md. R. As.		R. As.
Aonla fruits—dried	0 12	to	1 0
,, leaves dried and bruised	1 12	to	2 0
Babúl bark	0 9	to	0 10
Bahera	1 12	to	2 0
Stick Lac	20 0	to	40 0
Myrabolams	2 8	to	3 8
Moonj Grass	1 4	to	1 8
Babúl Gum	8 0	to	12 0
Mixed Gum	6 0	to	8 0

(*Cawnpore Merchant.*)

VIII.—EXTRACTS FROM OFFICIAL GAZETTES.

1.—Gazette of India.

20th September, 1893.—No. 994-F.—Furlough for two years under Article 371 (*b*) of the Civil Service Regulations, is granted to Mr. J. Ballantine, Deputy Conservator of Forests, 3rd grade, Berar, on deputation to His Highness the Nizam's Dominions, with effect, from 16th June 1893. Mr. Ballantine availed himself of subsidiary leave from 10th to 15th idem, both dates inclusive.

2.—Bombay Gazette.

24th August, 1893.—Mr. G. R. Dabholkar delivered over and Mr. J. P. Orr, I. C. S., received charge of the offices of Forest Settlement and Demarcation Officer, East and West Thána, on the 21st instant in the forenoon.

31st August, 1893.—No. 6322.—Mr. L. S Osmaston, Assistant Conservator of Forests, First Grade, has been allowed by Her Majesty's Secretary of State for India an extension of extraordinary leave on medical certificate without pay for three months.

2nd September 1893.—No. 6376.—Mr. V. D. P. Rebeiro, L. C E., Extra-Assistant Conservator of Forests, Fourth Grade, and Sub-Divisional Forest Officer, Bassein, is allowed privilege leave of absence for two months.

4th September, 1893 —No. 6392.—His Excellency the Governor in Council is pleased to appoint Mr. Hasan Ali Muhammad Ali to act as Extra-Assistant Conservator of Forests, Fourth Grade, during the absence of Mr. V. D. P- Rebeiro, L. C. E., on privilege leave, or pending further orders.

8th September, 1893.—Mr. A. N. Master, L C. E., Extra Assistant Conservator of Forests, Fourth Grade, and Shahapur Sub-Division Officer, delivered over, and Mr. K. B. Phadke, Extra Assistant Conservator of Forests, Fourth Grade, and Kalyán Sub-Division Officer, received charge of the Sháhápur Sub-Division Office on the 2nd of September 1893, in the afternoon.

11th September, 1893.—Mr W. F. D. Fisher, Assistant Conservator of Forests, Second Grade, and Divisional Forest Officer, Panch Maháls, and Mr. A. N. Master, L. C. E., Extra Assistant Conservator of Forests, Fourth Grade, delivered over and received charge of the Divisional Forest Office, Panch Maháls, on the 4th instant, in the afternoon.

13th September, 1893.—No. 6660.—Mr. W. R. Woodrow, Deputy Conservator of Forests, Third Grade, and Divisional Forest Officer, Dhàrwár, is allowed privilege leave of absence for two months and seventeen days from 20th September 1893, or such subsequent date as he may avail himself thereof.

19*th September*, 1863.—No. 9750.—Mr. E. G. Oliver, Divisional Forest Officer, West Khándesh, was in charge of the East Khándesh Division, in addition to his own duties, from 22nd May to 19th June 1893, during the absence of Mr. R. H. Madan on leave on medical certificate.

3.—MADRAS GAZETTE.

16*th August*, 1893.—N. S. Veera Charlu, Forest Ranger, Kurnool District, is granted two months' privilege leave on medical certificate from the date of relief.

18*th August*, 1893.—The following Forest subordinates of the Northern Circle have passed the Departmental Examination in Law, Code and Accounts held on 17th July, 1893 :—

S. Eggia Narayana Sastri, Forester, First Grade, Anantapur, in Forest Law.

Syed Yasim Sahib, Forester, Fourth Grade, Kurnool.

L Venkanna, Forester, Second Grade, Ganjam District.

P. Subba Rao, Forester, Fourth Grade, Kistna District.

Mir Nizam Moideen Sahib, Forester, Fourth Grade, Kistna District.

A. V. Subbarayudu, Acting Forester, Fourth Grade, Kistna District.

Eggia Sastri, Forest Ranger, Fourth Grade, Godavari District, having passed the Handwriting Test, the condition in the Establishment list against his name may be removed.

25*th August*, 1893.—No.438.—In continuation of the leave notified at page 382 of Part I of the *Fort St. George Gazette*, dated 29th March 1892, (Notification No. 125), Mr. C. G. Douglas, Deputy Conservator of Forests, has been granted by the Right Honorable the Secretary of State for India an extension of six months' leave on medical certificate, the period subsequent to 12th February 1894 being considered to be extra leave without pay.

31*st*, *August*, 1893.—No. 453.—Mr. H. J. A. Porter, Deputy Conservator of Forests, Madras, has been permitted by the Right Honorable the Secretary of State for India to return to duty within the period of his leave.

6*th September*, 1893.—To T. Narayanaawmy Aiyar, Forest Ranger, Chingleput District, now on transfer to North Arcot District, for three months, from the 2nd instant, under article 369 of the Civil Service Regulations.

8*th September*, 1893.—Ranger Mr. Thompson, Salem District, will continue to act in the 4th Grade from the 11th July 1893 until furtther orders, *vice* M. Rama Rao.

7*th September*, 1893.—A. Eggia Sastri, Forest Ranger, Godavari District, is granted an extension of ten days, in continuation of twenty days' leave granted in Office Order No. 43, of 1893-94.

8th September, 1893.—No. 458,—

No.	Name and designation of Officer.	Present grade.	Grade to which promoted.	Nature of promotion.	Remarks showing cause of vacancy, &c.
1	Mr. H. A. Gass, Deputy Conservator of Forest.	Second Grade and acting First Grade.	Conservator of Forests, Third Grade.	Acting ..	During the absence of Mr. Cherry on privilege leave or until further orders.

No. 459.—

No	Name of Officer.	District.	Nature of charge	Remarks.
1	Mr. H. A, Gass ...	Southern Circle.	Conservator of Forests.	Acting, *vice* Mr. Cherry.
2	Mr. H. A. Gass ...	North Coimbatore Division.	District Forest Officer.	To join on the expiration of his acting appointment as Conservator.
3	Mr. W. C. Hayne ...	Chingleput	Do.	To join on relief by Mr. Porter.
4	Mr. H. J. A. Porter	Trichinipoly *cum* Tanjore.	Do.	To join on return from leave.

8th September, 1893.—No. 468.—Mr. W. Carroll, District Forest Officer, Chingleput, is granted furlough for one year, with effect from the 15th October, 1893, under article 371 of the Civil Service Regulations.

No. 469. Mr. J. W. Cherry, Conservator of Forests, Southern Circle, is granted privilege leave for two months, with effect from or after the 24th September 1893, under article 291 of the Civil Service Regulations.

16th September, 1893.—Ranger James Tapp, North Arcot District, is granted three months' privilege leave, under article 291 of the Civil Service Regulations, from the date of relief.

4.—Bengal Gazette

22nd September, 1893 No. 4027.—Babu Kedar Nath Mozumdar, Officiating Extra Assistant Conservator of Forests, 4th grade, is confirmed in that grade, with effect from the 15th November, 1892.

5.—N.-W. Provinces and Oudh Gazette.

30th August, 1893.—No. 2533.—Mr. L. Mercer, Deputy Conservator of Forests, in charge of the Gorakhpur Forest Division of the Oudh Circle, special leave on urgent private affairs for four months, with effect from the 1st September 1893.

12th September, 1893.—No. 2651.—Mr E. A. Down, Deputy Conservator of Forests, on return from furlough, to the charge of the Bundelkhand Forest Division of the Central Circle.

12*th September*, 1893.—No. 2652.—Mr, A G. Hobart-Hampden, Deputy Conservator of Forests, from the Naini Tal to the Kumaun Forest Division of the Central Circle.

12*th September*.—No. 2653....Mr. F. A. Leete, Assistant Conservator of Forests, in charge of the Kumaun Forest Division, on being relieved by Mr. A. G. Hobart-Hampden, to the charge of the Naini Tal Forest Division of the Central Circle.

12*th September*, 1893.—No 2654.—Babu Raghu Nath Pathak, Extra Assistant Conservator of Forests, in charge of the Bundelkhand Forest Division, on being relieved by Mr. E. A Down, to be attached to the Direction Division of the Central Circle.

12*th September*, 1893.—No, 2670.—The under-mentioned officers have been granted by Her Majesty's Secretary of State for India permission to return to duty:—

Name.	Service.	Appointment.	Date on which permitted to return.
Mr. A. E. Wild ...	Forest ...	Conservator of Forests.	Within period of leave.

13*th September*, 1893.—No. 2674.—Lála Har Swarup, Extra Assistant Conservator of Forests, from the Gorakhpur Forest Division to the Bahraich Forest Division of the Oudh Circle.

20*th September*, 1893.—No. 2789.—The following temporary promotions and reversions in the Forest Department are notified for general information:—

Entry No.	With effect from—	Consequent on—	Name.	From—	To—
1	2nd September 1893.	Mr. W. Shakspear, on privilege leave.	Mr. F. B. Bryant	Deputy Conservator of Forests, 3rd grade.	Officiating Deputy Conservator of Forests, 2nd grade.
			,, B. A Rebsch, on privilege leave.	Deputy Conservator of Forests, 4th grade.	Officiating Deputy Conservator of Forests, 3rd grade.
			,, M. Hill	Officiating Deputy Conservator of Forests, 4th grade.	Ditto.
			,, J. C. Tulloch	Officiating Assistant Conservator of Forests, 1st grad.	Officiating Deputy Conservator of Forests, 4th grade.
2	6th September 1893.	Mr. L. Mercer, on special leave.	Mr A. P. Grenfell	Assistant Conservator of Forests, 1st grade.	Ditto,

6.—PUNJAB GAZETTE.

28*th August* 1893.—No. 458.—Mr. L. Gisborne Smith, Deputy Conservator of Forests, is granted three months' privilege leave, under Articles 277 and 291 of the Civil Service Regulations, with effect from the 25th September, or such subsequent date as he may avail himself of it.

29*th August*, 1893.—No. 465.—Bhái Sádhu Singh, Extra Assistant Conservator of Forests, of the Hazára Forest Division, availed himself on the 18th July 1893, of the two months' privilege leave sanctioned with effect from 15th July in Punjab Government Notification No. 426, of the 9th August 1893.

7.—CENTRAL PROVINCES.

7*th September*, 1893.—No 4156.—Mr. E Dobbs, L. L. D, Deputy Conservator of Forests, Central Provinces, has been permitted by Her Majesty's Secretary of State for India to return to duty within the period of the leave granted him by Notification No. 3304, dated the 18th July 1893

No. 4194.—Mr. G. F. Taylor, Deputy Conservator of Forests, Nimar, availed himself, on the afternoon of the 9th ultimo, of the three months' privilege leave granted him by Notification No. 3668, dated the 8th idem, making over charge of his duties to the Deputy Commissioner, Nimar.

No. 4195.—Mr. R C. Thompson, Extra-Assistant Conservator of Forests, posted to the charge of the Nimar Forest Division by Notification No. 3669, dated the 8th ultimo (since cancelled), assumed charge of the duties from the Deputy Commissioner, Nimar, on the afternoon of the 14th idem.

No. 4196.—Privilege leave for three months, under Article 291 of the Civil Service Regulations, is granted to Mr. A. M. Caccia, Assistant Conservator of Forests, with effect from the date on which he may be permitted to avail himself of it.

No. 4197.—Mr. R. C. Thompson, Extra-Assistant Conservator of Forests, transferred to the Mandla Forest Division under Notification No. 3332, dated the 20th July, 1893, is posted to the charge of the Betul Forest Division.

12*th September*, 1893.—No. 4290.—Privilege leave for two months, under Article 291 of the Civil Service Regulations, is granted to Mr. J. J. Hobday, Extra-Assistant Conservator of Forests, with effect from the 11th September 1893, or the subsequent date on which he may avail himself of it.

20*th September*, 1893.—No. 4421.—Mr. H. Moore, Deputy Conservator of Forests, returned from the furlough granted to him by Notification No. 2401, dated the 14th July 1892, and with reference to Notification No. 3644, dated the 5th August 1893, assumed charge of the Bilaspur Forest Division on the afternoon of the 21st ultimo.

8.—BURMA GAZETTE.

25*th August*, 1893.—No. 331.—Under the provisions of Article 291 of the Civil Service Regulations privilege leave for three months is granted to Mr. T. A. Hauxwell, Deputy Conservator of Forests, with effect from the 14th September, 1893, or the subsequent date on which he may avail himself of it.

19th August, 1893.—No. 326.—In exercise of the powers conferred by section 67 of the Upper Burma Forest Regulation, 1887, the Chief Commissioner directs that in the area occupied by forest plantations and orchards at Bernardmyo and Mogôk, in lieu of the fines fixed by section 12 of the Cattle-trespass Act, 1871, the following fines shall be levied for each head of cattle impounded under section 66 of the Upper Burma Forest Regulation :—

	Rs.	A.	P.
For each elephant	10	0	0
For each buffalo	2	0	0
For each horse, mare, gelding, pony, colt, filly, mule, bull, bullock, cow or heifer	1	0	0
For each calf, ass, pig, ram, ewe, sheep, lamb, goat or kid	0	8	0

23rd August, 1893.—No. 7.—Mr. C. W. Allan, Extra Assistant Conservator of Forests, reported his return from the privilege leave granted him in Revenue Department Notification No. 160 (Forests), dated the 27th April 1893, on the afternoon of the 16th August 1893 and assumed charge of the Myadaung subdivision on the same date.

29th August 1893.—No. 335.—In exercise of the powers conferred by section 40 of the Upper Burma Regulation, 1887, the Chief Commissioner directs that the following rule shall be substituted for Rule 36 of the Rules under the Regulation published in Revenue Department Notification No. 140, dated the 19th April 1893.

" 36. No person shall move timber in transit without a pass from the Deputy Commissioner of the district or Forest Officer of the forest division in which the timber is, or from an officer empowered by such Deputy Commissioner or Forest Officer in that behalf, or otherwise than in accordance with the conditions of such pass.

Provided that this rule shall not apply to—

(*a*) bamboos or firewood in billets.

(*b*) timber collected under a license granted in accordance with Rule 63."

No. 336.—With reference to Revenue Department Notification No. 335, dated 29th August 1893, the Chief Commissioner directs that the following form of pass for timber shall be substituted for the pass prescribed in Rule 37 of the Rules under the Upper Burma Forest Regulation published in Revenue Department Notification No. 140, dated the 19th April, 1893, and numbered as Appendix XV to those rules.

Timber Removal Pass.

Pass to remove timber has been granted to—

(1) Owner's name

(2) Destination.

(3) Kind of timber.

(4) Hammer-mark.

(5) Amount of timber.

(6) Place at which pass must be presented.

(7) Amount paid for this pass.

(8) Date of expiry.

Any one removing timber without a pass in this form is liable to a fine of Rs. 500 and six months' imprisonment.

30*th August*, 1893.—No. 337.—Mr. C. W. Allan, Extra Assistant Conservator of Forests, is transferred from the Tigyaing subdivision, Katha Forest division, to the Yaw Forest division.

No. 338.—Mr. R. F. Lowis, Extra Assistant Conservator of Forests, Ruby Mines subdivision, is posted to the charge of the Tigyaing subdivision in addition to his other duties.

31*th August*, 1893.—No. 343.—Mr. A. F. Gradon, Deputy Conservator of Forests, 4th grade, is appointed to officiate as Deputy Conservator, 3rd grade, with effect from the 1st January 1893.

11*th September*, 1893.—No. 346.—Mr. J. Messer, Assistant Conservator of Forests, is posted to the charge of the Salween-Attaran division of the Tenasserim Forest Circle, and will, until further orders, be in charge of the Agency division, Moulmein, in addition to his other duties.

13*th September*, 1893.—No. 349.—Mr. W. J. Lane-Ryan is promoted from the 4th to the 3rd grade of Extra Assistant Conservators of Forests, with effect from the 5th May 1893. This promotion is subject to the condition that Mr. Lane-Ryan will revert to the 4th grade if he fails to pass in Burmese by the Higher standard at the departmental examination to be held in November 1893.

14*th September*, 1893.—No. 352.—The undermentioned officer has been granted extension of leave by Her Majesty's Secretary of State for India :—

Mr. J. Nisbet, Deputy Conservator of Forests, six months' furlough on medical certificate.

20*th September*, 1893.—No. 363.—Under the provisions of Articles 277 and 282 (*a*) (1) of the Civil Service Regulations Mr. C. W. B Anderson, Extra Assistant Conservator of Forests, is granted privilege leave for three months and fifteen days, effect from the 4th September 1893.

21*st September*, 1893.—No. 364.—The following promotions are ordered in the Forest Department :—

Maung Kale, Extra Assistant Conservator, 3rd grade, to be Extra Assistant Conservator, 2nd grade.

Mr. C. W. Allan, Extra Assistant Conservator, 3rd grade, to be Extra Assistant Conservator, 2nd grade.

9.—ASSAM GAZETTE.

24*th August*, 1893.—No. 8487G.—Privilege leave of absence for two months, under article 261 of the Civil Service Regulations, is granted to Babu Jogesvar Sur, Extra Assistant Conservator of Forests, with effect from the 17th August 1893

25*th August*, 1893.—No. 8488G.—Mr. A. M. Long, Assistant Conservator of Forest, Sibsagar Forest Division, is placed in charge of the Garo Hills Forest Division with effect from the 17th August 1893,

25*th August*, 1893.—No. 8489G—Mr. W. F. Lloyd, Deputy Conservator of Forests, Lakhimpur Forest Division, is placed in charges of the Sibsagar Forest Division in addition to his own duties, until further orders.

8th September, 1893.—No. 8932G.—With effect from the 8th August 1893, in consequence of the departure on privilege leave of Mr. R. H. M. Ellis, Deputy Conservator of Forests, First Grade (provisional),—

Mr. J L. Pigot, Deputy Conservator of Forests, Second Grade (provisional), to officiate as Deputy Conservator of Forests, First Grade (provisional), and to be seconded.

Mr D. P. Copeland, Deputy Conservator of Forests, Second Grade (provisional), to officiate as Deputy Conservator of Forests, First Grade (provisional, *vice* Mr. J. L Pigot, seconded.

Mr. H. G. Young, Deputy Conservator of Forests, Third Grade (provisional), to officiate as Deputy Conservator of Forests, Second Grade (provisional).

Mr. T J. Campbell, Deputy Conservator of Forests, Fourth Grade, to officiate as Deputy Conservator of Forests, Third Grade (provisional)

15th September, 1893 —No 9114G —In consequence of the death of Mr. J C. Kelly, Extra Assistant Conservator of Forests, First Grade, the following promotions are made with effect from the 1st June, 1893.

Babu Upendra Nath Kanjilal, Forest Ranger, Fourth Grade, to be an Extra Assistant Conservator of Forests, Fourth Grade, and to be seconded

Babu Kripanth De, Forest Ranger, Fourth Grade (provisional), to be an Extra Assistant Conservator of Forests, Fourth Grade (provisional).

11.—Mysore Gazette.

16th September, 1893 —No 4961.—Under Article 172 of the Mysore Service Regulations, Mr. S. A Bapu Rao, Assistant Conservator of Forests, doing duty in the office of the Inspector General of Forests, is granted casual leave of absence for 15 days with effect from such date as he may avail himself of the same.

48

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